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SSA's Journey to SW-CMM® ML3 and Transition to CMMI®

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The Problem

1998-1999 SSA Office of Systems realized that 33% of their workforce would be eligible to retire within 5-6 years (2003-2005).

2006-2013 Baby Boomer generation eligible to retire and draw Social Security benefits.

Customer Service demands were already overwhelming existing SSA computing infrastructure.

SSA IT infrastructure "culture of heroes"

"Perfect Storm" conditions for major customer service problems that could not be tolerated by the agency and customer base.

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SSA's Unique Position as a Supplier of Services

Customer Base—U.S. Taxpayer @159 million individuals

Customers —each customer has unique characteristics (age, total payments or lack of payments into the Social Security system, disabilities etc.)
- Retired workers
- Disabled workers
- Survivors of deceased workers
- Workers residing in foreign countries (@423,000)

Social Security-basic services
- Old-Age and Survivors Insurance
- Disability Insurance
- Medicare (Hospital Insurance)

Social Security Programs governed by statute and law, oversight bodies (GAO, OPM, Congress)
- Affects how the SSA can interact with customer base
- Affects how the SSA can interact with sister agencies e.g. IRS, DoD that have the same/similar customers

Why the SW-CMM and Transition to CMMI?

SSA Office of Systems and IT "Culture of Heroes"
- Consistently not producing required products and services
- Not enough "heroes" for the number of high visibility customer service applications
- Employee burnout
- "Heroes" core group expected to retire in 5-6 years
- Learning curve for new/transferred personnel lengthy, 6-12 months.
- Customer/Oversight bodies relationships were not positive (Customer complaints and GAO reports)

SSA services needed to evolve with its' Customer base
- Customers becoming "internet" sophisticated
- Customers were intolerant of "paper based-office visits" requirements for basic SSA services e.g. applying for services, changes to basic information
- Main-Frame based technology required to evolve/transition to customer friendly "front end" interfaces

Why the SW-CMM and Transition to CMMI?-2

SSA Office of Systems Defining Principles for Improvement:
- Process Improvement
- Knowledge Management
- Customer Relationship Management

These principles ultimately characterized the SSA's Office of Systems Software Process Improvement Goal:

"Systems wants to deliver what it promises, when it is promised, with the highest quality at the lowest cost."

SW-CMM- the Beginning

Early improvement work with SSA project managers and teams focused on identifying best practices, standards, and architectures

Approach: selected the SW-CMM and the IDEAL Model

SEI models selected because:
- products publicly available
- history of proven benefits
- were seen as providing improvement not just in process, but enabling improvement regarding the SSA's skills base (Knowledge Management) and Customer Relationship Management -the other two defining principles for overall improvement within the SSA

SW-CMM- the Beginning-2

People/workforce transformation:

SSA Executive Management: understood the need to transform the agency and its' workforce

Transformation:
- required significant time and funding
- investment in new technology and personnel

Oversight Bodies (GAO, OPM) demanded action

The Journey to Maturity

1998-SSA realized it had "Perfect Storm" conditions developing that unless action was taken would leave the agency unprepared to service its customer base

2000- SSA Office of Systems established a baseline set of core practices

**2001- Achieved SW-CMM ML2 in November
          Mainframe and field operations based projects and programs**

2002- Internet focus of new customer service interfaces provided focus in SSA Office of Systems Electronic Services (OSES) and SW-CMM ML3

2004- December Gap analysis demonstrated SSA Office of Systems not quite ready for formal appraisal

2005 - Achieved SW-CMM ML3 January 2005

2005 – March/April CMMI training and SCAMPI C workshop conducted to refine transition to CMMI strategy

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On the Journey-Along the Way

Internal Tools that facilitated the entire effort and sustain it today:

- Project Resources Guide (PRIDE)- a web-based tool defining project life-cycles (Internet, collaboration, standard projects), SSA Systems staff will plan and execute.

- Vital Signs and Observation Report (VISOR)- a intranet-based color coded dashboard of project status used by Office of Systems Executives

- Risk Identification and Mitigation System (RIMS)- a intranet-based tool for documenting and status project risks

PRIDE

VISOR

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ERISA/ EFAST Rel. 2.0 - (2805ERIS)	PM -- Maria.L Ray (62637) AC -- OEEAS

PSA	SDP	FP	MSP		VISOR Colors	SCOPE (BLUE)	SCHEDULE (BLUE)	RESOURCES (BLUE)	RISKS (BLUE)	CSI (BLUE) 06/15/05

RESOURCE INFORMATION as of 07/23/2005

FTE DATA	DCS WYs	Contractor WYs	OT (hrs)	
Estimated	1.70	0.00		
RAS Actual	1.32	0.00	29.75	

STATUS REPORT as of 07/19/05

data base.
- The final function point analysis is scheduled for 8/31/05.

CURRENT:
- The ERISA SSA-IRS MOA is pending. It is in OGC for
- The ERISA SSA-PBGC MOA is pending. It has been
  All PBGC comments/corrections have been incorporated.

⚠ RISKS

1 Need for matching agreements
2 Need for POMS Instructions

DP Project Number Release Number Project Name	Planning	Requirements	Design	Development	Validation	DIET/ BITS	Training	Production
2805ERIS Rel.No. 2.0 ERISA/ EFAST Rel. 2.0	GREEN Completed 05/11/05	GREEN Completed 04/08/05	GREEN Completed 03/11/05	GREEN Completed 04/15/05	GREEN Completed 04/28/05	GREEN Completed 05/23/05	GREEN Completed 09/19/03	GREEN Completed 05/27/05

RIMS

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Risks for 2805ERIS, ERISA/ EFAST Rel. 2.0

Risk Number	Risk Title	Mitigation	Severity	Probability
1	Need for matching agreements	Watch	Marginal	Improbable
2	Need for POMS Instructions	Watch	Marginal	Improbable

Link to
return to VISOR.

PIAT
MAKING THE PIECES FIT

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On the Journey- Pitfalls and Successes

Executive Commitment and Planning—A "Constancy of Management Purpose" is essential.
- Dedicated, consistent executive support and direction proved invaluable when inevitable organizational "turf wars" and "project priorities" erupted and changed

Training and Education
- Concepts and Model specific focused training provides the "bootstrap".

Appraisals
- Provided a "wake-up" call. SCE in 2001 on mainframe group-huge learning experience for organization and SPI staff

Transitions
- Model and appraisal experience not easily transferred to new staff and projects—systematic dedicated training of projects staff and PI implementation staff is required

On the Journey- Pitfalls and Successes-2

SCE Gap analysis in 2004-weather and logistical nightmare—we weren't as ready as we thought we were!

- Weather—Snow storms can shoot a schedule
- Appraisal Time allotted insufficient for Model and organizational scope (a lot was missed!)
- ATMs will become change agents following any appraisal!
- Gap analyses can provide mid-course corrections on implementation approach to PI efforts.
  - Discovered QA implementation approach needed refinement

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On the Journey- Pitfalls and Successes-3

Transition from SW-CMM to CMMI is a natural evolution

CMMI model requirements and practices are more defined.

Anticipated "easy" tailoring of CMMI to fit SSA applications and projects:

- translating CMMI SE/SW into customer services and web environments, harder than it looks
- expanded scope from "software only" to "whole system"
    - learning curve associated with Organization's Set of Standard Processes (OSSP), projects and metric data management is significant

Process Improvement at the SSA Office of Systems

Benefits:

- Standard, well documented, reusable processes and procedures

- Streamlined and overlapped tasks that reduced development time by 6-to 12 months within SSA Office of Systems

- Achieved verifiable track record of implementations of 50 interactive/transactional public internet services on time, within the expected scope and within budget

- Established reliable estimates for costs and schedule for new projects and SSA planners

Summary: Key Findings from the Journey

Process Improvement Categories:

- Project Team Characteristics (included evaluations of application experience, language experience, requirements volatility)
- Productivity (Function Points/month implemented-30% improvement)
- Predictability (effort to complete-improved by 12%)
- Project Estimation (duration-no statistical improvement, but deviation extremely low 3.5%)
- Effort Trends (steady, but significantly improved in light of 25% turnover/new staff on projects)

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Summary: Key Findings from the Journey-2

Knowledge Management:

- Overall improvement of total workforce attributed to process improvement efforts

- Knowledge in:
  - applications e.g. Websphere, network operations
  - Language e.g. C++, Java
  - Estimating and Measurement
  - Requirements Definition

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Summary: Key Findings from the Journey-3

Customer Relationship Management:

- American Customer Satisfaction Index surveys of SSA's internet services range from 86-92 (out of 100).

- These are the highest scores to date for government or private sector applications.

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Summary: Key Findings from the Journey-4

Intangibles:

SSA Office of Systems:

- "Culture of Heroes" replaced with "Culture of Confident Capability"

- Atmosphere of mature, disciplined, highly trained staff members, replaced the burned out employee

- SSA Office of Systems credibility with project sponsors inside and outside the SSA extremely high

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Transition to CMMI

Process Improvement works!

Can be applied to other areas within the SSA.

CMMI is the evolution of SW-CMM and provides more of a Systems view regarding computer software application development. CMMI provides an expanded application of PI to more SSA applications.

CMMI Training and Education continues for SSA workforce and is extending beyond the Office of Systems.

Transition to CMMI-2

CMMI vs SW-CMM gap analysis performed January 2005

CMMI practices are being "baselined" relative to existing policies, procedures and practices

Mini-appraisals on selected projects/programs will be conducted to measure progress against defined policies and PI inititatives two- three times a year

Internal tools (PRIDE, VISOR, RIMS) content will be revised to reflect adopted best practices and policy

Observations

For government organizations with similar customer
service requirements:

1. PI can provide measurable improvement
2. PI will take longer than you initially estimate
3. PI requires sustained commitment by executive
management
4. PI involves a significant % of the workforce
5. Appraisals and ratings are benchmarks that require
funding, planning and execution that can be used to
sustain organizational objectives
6. PI can ultimately provide satisfied customers and
happy end users

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